THE

INTRODUCTORY LECTURE

TO THE

COURSE OF THE INSTITUTES OF MEDICINE,

IN THE

UNIVERSITY OF PENNSYLVANIA,

FOR 1841-2.

BY SAMUEL JACKSON, M.D.

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University of Pennsylvania, Nov. 5, 1841.

To Dr. Samuel Jackson:

Sir,—In behalf of the Medical Class of the University of Pennsylvania, we return you their sincere thanks for the very able, eloquent, and instructive Address which you delivered before them on the 4th inst.; and earnestly request that you will favour us with a copy for publication.

Permit us, Sir, to subscribe ourselves, with considerations of regard and friendship,

Yours &c.

J. F. BIRD, Phila.
A. C. WHARTON, N. C.
A. H. MACNAIR, N. C.
RICHARD HENRY STEVENS, Mo.
G. SAULSBURY. Del.
I. W. CLAWSON, N. J.

Philadelphia, November 6th, 1841.

Gentlemen:

It gives me great pleasure to comply with the request of the Medical Class of the University of Pennsylvania, communicated in your note of yesterday.

With great respect, I remain,

Your obedient servant,

SAMUEL JACKSON.

To Messrs. J. F. Bird, A. C. Wharton, A. H. Macnair, Richard Henry Stevens, G. Saulsbury, I. D. Clawson.

INTRODUCTORY LECTURE.

GENTLEMEN:

Ars longa, vita brevis est: Art is long, or difficult, life is short. The lapse of twenty-three centuries since this concise, but comprehensive sentence was first pronounced by the great Father of Medicine, has confirmed its truth. At this time, as then, all who are capable by their knowledge of understanding the subject, admit that the difficulties of art cannot be mastered in the short period of life.

You find then, gentlemen, that in undertaking to form yourselves for the responsible duties of the medical profession, you devote yourselves to a life of unrelaxing exertion, of never ending toil. At no time will you be able to throw yourselves into the lap of luxury and repose, wrapped in the delusive hope that your work is done: that you have mastered your art, and are in possession of established rules that will enable you, without the labour of observation, reflection and thought, from simple symptoms, to dispense a certain cure.

The vulgar believe, and impostors assert, that diseases

"Have each their record with the cure affixed."—*The Task.*

And that medicine consists in discovering a symptom and prescribing its remedy, already ascertained and handed down from the experience of others.

If this were true, medicine, instead of ranking with the noblest of sciences, would fall below the meanest of the arts. It could not be called an art; it would sink into a miserable trade, not more respected than it was formerly in Europe, and has been even within a century in Spain and Italy, when physicians and barbers occupied the same station, and possessed the same consideration in society.

If such were the character of medicine, how unnecessary are the long and laborious studies by which physicians prepare themselves for the exercise of their profession! How

useless is the cultivation of Anatomy, of Physiology, of Pathology, Therapeutics! The facts and knowledge these impart, would be inapplicable to the treatment of disease.

No especial knowledge is required to detect a symptom. It is addressed at once to the senses. Whoever has sight, hearing, touch and smell, cannot fail to recognise that a patient has a cough, or vomits, or has a fever, or a hemorrhage, a spasm, or a loss of power in the muscles, or any other symptom, the external evidence of disease.

Now, if there be a fixed remedy, as is pretended, for each specific symptom, with its number labelled, what other capacity or knowledge is required than that of the simple senses, with the rudiments of the lowest education. The mending of a shoe, or the darning of a stocking, require higher qualifications of intelligence, than would the treatment of the numerous maladies that waste the human race and afflict mankind, conducted on such principles.

But this is not medicine.—Symptoms, the expression or outward signs of disease, are not the disease: nor, can they alone, without the aid derived from a perfect knowledge of the organism, indicate the seat or nature of the disease, and consequently the appropriate treatment.

Symptoms are the disordered state of some function. Ignorant of the function, symptoms cannot be rightly understood. But the function is an act of an organ; the organ, therefore, must be known before we can know the function: the organs are, however, very complicated in their structure; they are formed by the interweaving of various tissues different from each other in their structure, modes of vitality, sensibility and irritability. It is then necessary for the complete knowledge of an organ, that we have a previous acquaintance with the tissues, that are its component elements.

But an organ is a part of an apparatus of organs executing a complex and general function, of which its own particular function, is a subordinate act. The value of an organ and its function, and, consequently, the value of a symptom, depend on the more or less essential part the organ and function perform in the apparatus; or that apparatus in the living economy. Hence then, it follows, that a knowledge of the whole

apparatus, of all its separate organs and functions, is indispensable for the ascertainment of the value of the organ, its function, and the symptoms proceeding from them.

Again: a symptom is a result of a disordered function. Now the lesion of the function arises from a modification in the vital force, or sensibility of the organ. But these are fluctuating elements. They never are stationary: they vary in intensity, in degree, in persistency, in the same individual at different ages and times, and in different individuals. They are influenced by numerous modifiers, external and internal, with whose active powers they have a relation. But in whatever mode they are affected, when they cause a specific disorder of the function, it is the same specific symptom that is produced, and in each circumstance possessing a different value. The same symptom proceeds, in this manner, from different conditions of the same organ. There is but one outward expression to indicate a great variety of internal affections. Its true meaning is to be determined by tracing it to its cause, by reaching its root. But this is an analytical process of the mind, requiring a perfect knowledge of the living organism in all its diversified phenomena, natural or physiological, and anormal or pathological.

Symptoms are the language of disease. It is an imperfect language, and easily misconceived. The things to be expressed are infinite; the expressions limited. One expression has twenty meanings. Hence, it is, that physicians so often understand the same symptoms differently. The most instructed, it is most probable, will be correct. Those who are ignorant of the fundamental branches of Medicine, as respects symptoms of disease, are like an individual who reads a book in a tongue which he does not understand. He sees and pronounces the words, but their meaning is sealed to him: or he obscurely, from some analogy of sound, guesses an interpretation.

Let us illustrate these observations by some examples. A cough is a symptom of disease. A cough is produced by a convulsive contraction of the muscles of respiration, causing a rapid inhalation and forcible expiration of air from the lungs, by which matters in the larynx, trachea, bronchial tubes and

air cells, are expelled and thrown out. It is excited by whatever makes a certain impression on the sensibility of the mucous membrane of the air passages enumerated, and air cells. This modification of the natural sensibility, transmitted to the central of organs of sensibility in the medulla oblongata and spinal axis, calls into action the centres of the motor power in the same situations, and thus excites the muscles that accomplish this specific modification of respiration, in the specific mode of a cough.

A cough is, then, a functional action, being a particular modification of the function of respiration, intended to accomplish an especial purpose. It is protective and preservative. It guards the air passages against the ingress of foreign bodies, that would interfere with the process of aeration of the blood, and expels the mucus, pus, and blood, the accumulation of which, secreted or effused from the respiratory mucous membrane, obstructing the bronchial tubes and pulmonary vesicles, would soon bring on suffocation.

A cough of this character is a therapeutic operation of the vital functions, a curative process of nature resulting from, and maintained by, the synergy that unites the various functions of an apparatus, in the harmony of a combined action, to perform a cure of a specific evil. Such a cough is to be respected, in the treatment of the case.

But a cough is a reflected, or excito-motory action, as has been shown, commencing with the sensibility of the respiratory mucous membrane, passing through the sensory and motor centres of the medulla oblongata and spinal axis, and ending in the respiratory muscles. Now a cough may be excited by a lesion in any one link of this chain. The sensibility of the respiratory mucous membranes, disturbed by an irritation seated in that tissue, or other cause, without the presence of foreign matters, or secreted or effused fluids of any kind, to be removed, will occasion coughing.

A lesion, further, of the sensory nervous filaments, passing to the sensory centres; or of the sensory centres themselves; or of the motor centres; or the motor nerves passing to the muscles; a lesion in the function of any one

of these distinct parts of the nervous portion of the respiratory apparatus, may also give rise to coughing.

The cough in these circumstances, ceases to be a function. It has no object, it answers no particular end. It is not a synergic result. It is a true pathological result. The important functions of respiration, innervation, circulation, digestion, are more or less disturbed and interrupted by it. A cough of this kind must be attacked at once, and got rid of as a mischievous nuisance, and as soon as possible, by the most prompt and active means.

The sensory and motor nervous powers, though controlled by the separate numerous centres of the cerebro-spinal axis, have more or less community of action throughout the economy. From this circumstance it happens, that diseases in one organ or apparatus, often disturb the action of distant organs or apparatus, occasioning symptoms in them, through the nervous centres, that influence their movements. Thus, disease in the stomach, liver, intestinal canal, uterus, or bladder, by disordering the nervous sensory, or motor powers of the spinal axis, will give origin to secondary sympathetic symptoms, according to the particular nervous centres,—cerebro-spinal or ganglionic,—that are especially predisposed, at the time, to be morbidly affected or unduly excited. When this happens to be the state of the respiratory nervous centres, a cough will be produced by those distant lesions in organs of an entirely distinct apparatus.

This kind of cough, again, is not of the synergies: it is useless, means nothing, accomplishes nothing. It is a truly sympathetic symptom, without salutary tendency. In a cough of this character, it would be idle to prescribe remedies for it as a symptom. It can be treated methodically only by finding out the seat and nature of the primary lesion, and treating that in an appropriate manner.

Again; coughing is a direct result of the action of sensory and motor nervous power. As these unstable elements may be exalted, or depressed, the cough will vary in its force and character. When they are active and excitable, a violent and spasmodic cough, distressing and alarming in appearance, will result from a most trifling lesion. On the other

hand, should they be depressed or low in power, an intense irritation of the respiratory organs will scarcely excite a cough, and suffocation may occur from obstructed air tubes and pulmonary vesicles, because the obtuse sensibility of the sensory organs is incapable of being excited by the offending cause.

The separate symptoms of any disease, examined in this analytical manner, would present similar results, and afford equally cogent illustrations. This is sufficient to establish the fallacy, and to demonstrate the shallowness of the pretence, that diseases can be known by symptoms alone; can be treated from no other knowledge than that of their symptoms; and that there can possibly exist in nature, fixed and positive remedies for the symptoms of disease.

The length of the art of medicine, opposed in contrast, by Hippocrates, to the shortness of life, may be viewed in two aspects:—1st. As regards the completion of the art itself: and 2d. As to the power in any individual, of being perfect in the art.

Medicine, notwithstanding the long period in which it has been cultivated, with the industry, zeal and ability that has distinguished its votaries, in all ages, is far from having arrived at the perfection it is capable of reaching. This slow and difficult progress, is the necessary consequence of the multiplicity, diversity, obscurity and changeableness of the phenomena, that, in their aggregate, constitute life, the object of medical studies.

Medicine is a practical art, a science, and a philosophy. In its commencement, it was a rude and gross empiricism, just as we now see it in the hands of the illiterate and the ignorant. In its progress, with the advancing knowledge and civilization of mankind, the experience and observation of enlightened minds, applied to the study of diseases, and the means of relief from them, introduced refinement, order and system into the methods of proceeding; and thus raised it to an art. With some, as in the school of Cnidus, the art was no more than simply empirical; that is, it consisted solely in the knowledge and rules derived from accumulated experience. With others, as the Asclepiades of Cos, more enlightened and intelligent, the reasoning powers were exercised

on the results of experience, to determine the principless or laws of their production; and science was blended with the art.

No art can be perfect, divorced from science. But science is of slow creation. It succeeds to art long after this has been established, the false observations and prejudiced maxims of which, oppose the movement of science. Science is born of the intellect, brooding on phenomena in the relations of cause and effect. The human mind, breaking the trammels that bind it down to the grovelling consideration of the unreasoned precepts of mere art, soars into the regions of unmingled thought, and seeks to divine the truth of things by its own intrinsic light. Science is, then, pure mental speculation. In its new-born existence, it revels through the wild regions of fancy, and draws its materials from the inexhaustible stores of the imagination. Its facts are visionary, its principles abstruse and unrelated abstractions. In Geometry, it produced the properties of numbers, the movements of the celestial spheres, and similar notions. Natural Magic, Astrology, and Alchemy, were the first offspring of Science in Physics. In medicine, it gave origin to occult properties, to assumed qualities in the fluids or solids; and in remedies, to sidereal influences, to the doctrine of the signatures, to that of sympathetic community, and other suppositive principles, as causes of the phenomena of disease, and therapeutic operations.

A few of the God-gifted minds of the Greek philosophers, by the forcible and innate instinct of their intelligence, at a single bound leaped the deep gulf, that for centuries continued to separate art from science. Archimedes and Euclid in Geometry; Aristotle in Natural History, Politics and Morals; Hippocrates in Medicine, struck out scientific truths and principles of perennial vigour, applying them to practical ends. They were too much in advance of the knowledge of the ages in which they lived, to change the fixed order of existing systems, or the modes in which knowledge could be understood. The era of science had not arrived: The soil was not prepared, and the shoots that struck into it soon withered.

Eighteen hundred or more years elapsed before the appropriate time had come, and then, the experiments of Gallileo in

physics, and the vigorous reasoning of Lord Bacon, gave an impulse to science that has placed it in the van of art, its true position, guiding, maturing and completing all its processes and rules, creating new acts and processes, and originating powers of inconceivable energy, before unknown.

The present is the era of science. Science mingles in every thing; changes every thing; improves and perfects every thing. In no period of human society has so much been effected in so short a period. Science, by the power it confers on man, in enabling him to become the master of the forces of nature, and to compel them to administer to his wants and designs, is changing the physical relations of this globe. It is acting not less intensely on the moral than on the physical world. The old foundations, and the erections on them, of society, are shaking and falling before it. The principles of civilization, originating in, and adapted to, a nascent period of society, with its feudal and barbaric sentiments of a glittering and false glory, yet continue to govern the European world, and exercise a profounder influence in this country, notwithstanding its newer political institutions, than is supposed. These, too, are being questioned and combatted; the revolutionizing spirit that is abroad spares not them. No prophetic eye can foresee when, and where, and what, will be its ending.

The scientific movement of medicine is not less active. The era of speculation has just closed; the era of positive science has commenced. The movement was later in medicine than in the physical arts. It is now in rapid progress. It began with John Hunter. It is impossible to pronounce the name of this illustrious man without feelings of veneration and respect.

John Hunter stood alone in that thick night, that had palled the science of medicine, for ages, in the dunnest cloud of ignorance. His genius, heaven-lighted, shone like a brilliant Pharos, throwing its illuminating rays into the surrounding gloom, giving a new direction, and animating to new exertions the long benighted wanderers of medical science. The whole face of the science soon changed. He introduced experiment into physiology, and at once constituted it a science. Every department of the physiological sciences was the ob-

ject of his research, and felt the animating influence of his genius. He originated comparative anatomy and physiology, the cultivation of which is rapidly laying open the otherwise unapproachable mysteries of the human organization. Surgical and medical pathology, before entirely conjectural, assumed from his principles a more positive character, and to which could be affixed some specific ideas.

It is true, that many things now well understood, John Hunter saw but dimly shadowed in the darkness his genius was dispelling, unaided by other lights than his own. He laboured too with difficuty in attempting to express, in language, new phenomena: to convey to other minds the great conceptions with which his own was teeming, and that had never before entered the thoughts of man. His style is obscure. His expressions are not the most definite or precise. This is the carping criticism of little minds, incapable of estimating original men, true men, who delve in the depths of nature and penetrate the inmost recesses of thought.

The Hunterian Museum, the work of his genius and labours, in the principles and object of its arrangement, as well as the skilfulness displayed in its preparations, is the noblest monument medical science can boast.

The Government of Great Britian truly appreciated one of the most important, yet most neglected duties of Government, when it purchased and endowed the museum of John Hunter, as a national institution.

"These are imperial works and worthy kings."—*Pope.*

A truer and more lasting glory casts its halo around that monument, perpetuating the memory of Hunter's labours, and extending their benefits to posterity, than will ever brighten the barren monument of Waterloo's victory, or the column of Austerlitz.

A more brilliant renown of a scientific reputation, like Hunter's, in the intellectual era that will come, and is approaching, will cast into the shade the vulgar glories of the Napoleons and Wellingtons, who have ensanguined the earth, and plunged their horses' hoofs in the gore and mangled carcases of their fellow-men.

Bichat may be considered the principal originator of posi-

tive science in the medicine of France. He did not, like Hunter, stand alone. Bordeu and Pinel had preceded him, and the illumination of their minds, had already dissipated the first difficulties of his path.

The genius of Bichat was active, brilliant, and vigorous; but it did not possess the depth, and energy, and extent of that of Hunter. The light that emanated from Bichat's intellect, was concentrated on a few objects and thrown in one direction. Those objects were seen distinctly, and the impression they imparted was vivid and exciting.

Hunter's mind irradiated far, and wide, and in every direction, the deep obscurity of the science: but often the things discovered were not seen in a full and striking outline, nor their connexions clearly displayed.

With less power, Bichat, probably, imparted a more vigorous impulse to the scientific movement of medicine, than Hunter, with his greater depth and profounder knowledge.

Nor must the name of the great Haller be passed by in silence, when speaking of the founders of positive science in medicine. The questions that, before him, had been treated as abstract speculations to be solved by the study of the closet, he seized upon in the field of nature, and brought to the test of experiment.

The mind of Haller was eminently practical. He saw clearly where truth lay hidden: and if he failed to drag it into day, it was from the impossibility to reach it in the absence of the means to accomplish the object, from the defective state of the collateral departments.

At the present period the utmost activity pervades the science of medicine; it rapidly hastens to its completion. No department is left unexplored. Facts are rapidly developed, tested, and established by positive and reiterated observations and experiments. It is not a single though a glorious intellect that brightens, for a space, a darkened region, but from every nook and corner, and "coin of vantage," stream out gleams of light, whose aggregate illumination lighten up every recess and department with the brilliancy of day.

More than three thousand years have witnessed the pro-

gress of medicine. Yet, you perceive, gentlemen, that it has not been perfected, as a science, indispensable to its completion as an art. How just, then, the axiom which heads this discourse—*Ars longa.*

If medicine, as a science, from the number and the diversity of its phenomena, has not yet reached its fulfilment, the time is still distant when it may be approached as a philosophy. As science is necessarily preceded by art, so philosophy must follow on the cultivation of science. In the present state of the science, the philosophy of medicine must be limited to a cautious generalization of its principles.

Art, Science, and Philosophy have been spoken of as distinct departments of knowledge. That our meaning may be more clear, it will be proper to exhibit their differences.

Art is knowledge acquired by experience. Its facts are simply historical, unconnected with their causes or the laws that compel their existence. The facts themselves are applied in practice, without an understanding of their operation. The practice of the art is then empirical.

Science is the knowledge of phenomena, in their relations of cause and effect, and the determination of the fixed laws that govern them. Nothing in the creation is a random result. Every thing has been foreseen and provided for. Every phenomenon occurs in the order and connexion intended for it. Some phenomena are constant, the series to which they belong are always in action, and they are regarded as immutable.

Thus, respiration of atmospheric air, circulation of blood, development of nervous power, vital activity, are an immutable series of phenomena. One cannot change without all being affected: one cannot exist without, or independent of the other. They establish a law of life. But all the physiological phenomena are equally permanent: they all result from equally established laws, necessarily productive of each phenomenon in its appropriate series, and in its position in that series. If the natural conditions are all present, for any organ, its functions or phenomenal acts must exist. The stomach must digest, a gland secrete, a sensory nerve feel, a motor nerve excite, a muscle contract, a sense give perception.

The law is positive: the effect must ensue, when the cause is present.

But the same positiveness attends on the occasional, or contingent phenomena, as they are manifested in disease. An inflammation, a fever, a palsy, a spasm, an abscess, vomiting, purging, any possible modification of the state of an organ, or its function, as they may occur singly or in combination, are not less the result of laws provided for their occurrence.

They are parts of series, or formulas of phenomena; have each their cause preceding them, as they are the causes of what necessarily follows them. There can arise no possible combination of the numerous elements, that compose the living organism of man, many of which have, probably, not yet taken place, but the law already exists, that determines the phenomena that do, or that will result.

Science then consists in the ascertainment of the existence and nature of phenomena, the arrangement of them in their specific categories, and the invariable order of their connexion. When this has been accomplished, a law of nature has been discovered, immutable in the production of the phenomena that obey it.

Science can be predicated of no scheme of knowledge, if the phenomena of which it treats, are not connected in a chain of dependant facts, arranged in the order of their connexion. When this has been effected, science is finished, and is positive. The possessor of it, has the power, any fact being given, to assert all that had preceded that fact. He traces the filiation of its anteceding phenomena to the primary or fundamental cause; and he can predict all that will ensue, from knowing the links that depend upon it. But a knowledge of the laws of nature, enables us to control them, to modify and bend them to our purposes. Science arms us with power; and the man of science is more efficient, yet safer, beyond calculation, over the mere man of art, or yet ruder empiric.

Philosopy is unconnected with the research into causes and effects. Phenomena, the object of the senses, and the subject of science, belong not to philosophy. It is the development of general truths by the operation of the mind, from pure reason; the establishment of fundamental and primary

facts, the governing principles of the phenomena of the universe, all combined in one unity of plan, emanating from the divine creative intelligence, that compose the great questions of philosophy. These are subjects not cognizable by the senses; that are beyond the grasp of the understanding, that exist independent of matter or phenomena. they belong to the divine idea, and can be comprehended only by that feeble emanation of the divine intelligence, imparted to man in his Pure Reason.

In the natural order of acquiring knowledge, were human knowledge once perfected, the commencement would be the study of philosophy, or the reason for the existence of phenomena, and the laws they obey: the second step would be the knowledge of science, or of the laws governing and arranging the production of phenomena; and, finally, the last subject of investigation would be the phenomena themselves, and the application of knowledge to accomplish results.

From this view, it is fairly apparent, that medicine is yet imperfect as an art, incomplete as a science, and almost wanting in philosophy. Again we find most true is the assertion: *Ars longa est.*

The second point of view, in which it was proposed to regard the length of art, contrasted with the shortness of life, —*vita brevis*—was, in reference to the individual capacity, in becoming perfected in the art of medicine.

The expansion given to medicine by its cultivation as a science, the creation of many new departments of research, the acknowledged supremacy of science over mere art, undoubtedly render a complete knowledge of the medicine of this period, a work of immense labour, but of proportionate value. It can be accomplished only by application and perseverance, conjoined to strong natural abilities. Velpeau is a living example of how much can be done, and well done, by one who is determined to accomplish all that lies within the reach of his capacity.

From the difficulties that attend an extended knowledge of medicine, there is a strong tendency manifested to cultivate the specialities of the science. Some one branch of investigation, some department of the profession,

or some one class of diseases, is selected, to which there is an exclusive devotion of time and application.

To a certain extent this method possesses some advantages. It must not be carried too far. A speciality cannot be detached from the science: it is a part of it, and can be properly understood and treated, especially the exceptional or irregular cases, that must arise at some time, only when the general principles of the science can be applied to the explanation of its phenomena, whether regular or anomalous.

There is another source that adds to the difficulties encumbering medicine, as an art, and increases the obstacles to the being perfected in its practice. This source is, in addition to the number of pathological affections, and their attending symptoms, the incessant revolutions that characterize diseases. No fact is better substantiated, than that diseases, from some unknown laws that influence the vitality of living beings, especially man, present themselves in constantly varying forms. This instability of disease, baffles experience. At one period, there prevails a uniform inflammatory tendency, and the anti-phlogistic and evacuant methods of treatment, are more or less applicable to most cases of disease, that occur during the ascendancy of that constitution.

Soon after follows another constitution the reverse of this. All diseases take on a low or typhoid type, the adynamic and ataxic states of disease, and a sustaining method is demanded.

At another period, malarial diseases, spread over extensive districts, filling every habitation with protean forms of febrile disease,—simple and malignant intermittents, pseudo remittents, and anomalous nervous disorders,—for which the great remedy cinchona or its alkaloids, must be relied on as the basis of a treatment.

Other prevailing forms might be enumerated, but these will suffice to establish the position we have laid down.

Intercurrent with these universal epidemic constitutions, occur especial epidemics, as small pox, measles, scarlet fever, influenza; all of which are modified, in each period of their return, by the prevailing constitution, and require a corresponding modification of treatment.

The epidemic constitutions that have been designated, succeed in cycles varying in duration, from ten to twenty years, with intermediate cycles, marked by no particular influence.

From this fluctuating movement of disease, the practice of medicine never can be settled down on established formulas, determined remedies and doses. A physician should never harness himself to any doctrine, or to any practice. The experience, tact and routine, he has acquired in one cycle, suddenly fail him, when a new one has set in. His studies, observations and experience, in treating disease, must recommence again, for each succeeding cycle of disease, as it circles in the course of time. The shortness of life,—vita brevis—scarcely admits of perfectness in an art, at once complicated and changeable, without zeal, assiduity and devotedness to the acquisition of knowledge.

This picture of the difficulties of your professional life, is no exaggeration. It is not intended, in presenting them to you, at this time, to discourage you, but to prepare you to expect, to encounter, and to vanquish them.

Half of the difficulties that necessarily beset us in life, disappear when we know what they are. The means to avoid or when unavoidable, to overcome them, become apparent.

It is evident, from the nature of the difficulties that belong to medicine, as it is now constituted, that they arise from the paucity, or want of fixed principles, and of the ascertained laws of life, which would furnish an explanation of all its phenomena, and a clue to the means of governing them, as far as they are susceptible of control, by human means.

Although the principles and laws of the whole science are incomplete, yet many are fairly established, and applicable with success to the solution of perplexing symptoms, and the treatment of intricate cases.

In your studies, then, endeavour to lay hold of the fundamental, or primary phenomena of the animal organism. From these commence and consecutively follow all the phenomena, that you are called on to observe and to compre hend.

When you possess these, you have the compass and the

chart, that will guide you in safety, though your way be trackless. You must take care, however, that you mistake not secondary for fundamental phenomena; and assumptions for truths, the wreck of so many ambitious hopes, the cause of so much self-deception.

There are fundamental truths in medicine. They are known by their perennity; they have never been entirely lost to the science, even in its gloom and depression, but have always re-appeared, whenever an original mind has applied its forces to the investigation of phenomena, and sought in the recesses of its reason, for the laws of their existence.

The most important of these, on which medical science must ever repose, and must always form the basis of a sound practice, I will now present to you, as the commencement, and the ending of medical investigations.

As these principles are present or absent, in any doctrine of medicine, will it be a truth or a fallacy.

These primary or fundamental facts, of the first consequence, may be arranged in the following series:

1. Life is a result of an unknown force, consonant to all the forces of nature; entering with them, in the unity of plan, on which the Creator has constructed the universe. It is called the vital principle, or organic force.

2. This principle or force is, consequently, in relation with all the other forces of the universe: is influenced by, acts on, and re-acts with them.

3. Its activity is exerted exclusively on organic matter, and is displayed alone in animated organisms, or living beings, vegetable and animal.

4. The essential character of its mode of activity is movement: the cessation of movement is death: its activity is excited and maintained by the forces of external and internal agents.

5. The direct phenomena of life, are effects or results of the actions and re-actions occurring between the vital principle or organic force, external forces, and organic matter. In the action of this triad, the organic force is the primordial principle of life; organic matter, in a fluid state, the primary element of life; external forces—caloric, electricity, oxygen—

the primary excitors of life: organization is the result or product of vital activity.

6. The secondary phenomena of life, are the functions or offices of the organs. The organs are the instruments, the functions are the means of life, in the higher animals. The functions produce and maintain the indispensable conditions of the primary vital phenomena, while they are, at the same time, dependent on the primary phenomena for their existence.—*Abeuntes in cirrulo.*

The functions form two distinct classes. The one class, purely chemical and mechanical in their nature, produce and maintain the organic and physical conditions of life. They are, the digestive or alimentary functions, absorption, respiration, circulation, secretion. They constitute the functions of organic or vegetative life, in the works of Physiologists.

The second class comprise the sensory and motor powers of the cerebro-spinal axis, and the contractility of the muscular fibres—irritability of Haller. They are the vital forces of Haller and others; but are clearly nervous functions. They are Dynamic functions, and their forces are the causes of the actions of the first class. They are known as the functions of animal life in systematic works.

7. The organic or vital force, in the production of phenomena, exhibits the following especial orders of phenomena:

a. It is creative: From a formless fluid organic matter, albuminous in animals, gummous in vegetables, there is developed, as the first result of its activity, germinal points, or nucleoli and nuclei; from which proceed germinative cysts, from which again are produced tissues, organs, living beings: the whole and each part constructed from an ideal type, existing in the eternal and creative intelligence of God.

b. It is conservative: The organization of living beings is never persistent. Every atom of every tissue, is dying and re-produced at each moment of time. Life and death, are inseparable and necessary relations.

But the form, the composition, structure, properties of each tissue and organ, are preserved and re-produced always the same, under the same circumstances. The conservation

of the natural condition, is the prolongation of the creative action of life.

c. It is medicative or therapeutic: The reactions producing vital phenomena are subject to be disturbed by the action of numerous exterior forces, that are not in relation or harmony with the vital principle, or organic force, either of the whole organism, in its unity, or in some of its special manifestations, in particular tissues and organs. This perturbed condition of the physiological re-actions of life, would necessarily end in the destruction of the natural organization, by perverting or suspending its formative and conservative operations. But provision is made to guard the economy from those destroying influences. The re-actions excited in the organs, or general organism, and the disorder of functions, named symptoms, are, for the most part, protective or recuperative processes, by which the economy is rescued from impending mischief and danger.

Vomiting, purging, expectoration, sweating, diuresis, a hemorrhage, an inflammation, fever, even spasm and convulsions, are pathological functions that expel offending causes, depurate the vital fluid, or dispel a pathological condition that has taken root in some tissue or organ, and whose function is injured or destroyed.

The disease belongs essentially to the modification of the vital activity, disordered and perverted in its mode of action. The symptoms of the disease, which we name, and too often regard as essentially the disease, are, in reality, the defensive and curative operations of the economy. Let us be on our guard that this false view do not betray us into dangerous interference, with that which is salutary in its intention.

The physician, in his true character, is the minister, the interpreter, the adjuvant of nature; not her master. He guides, controls, follows, obeys, as she dictates and requires; or he wisely suffers her to complete her own work, when the laws and means she operates by, are adequate to accomplish the end.

There is one more fundamental principle, to which I would direct your attention.

Diseases once established, have a regular course to run, and observe laws for their recovery. All reactive diseases must,

in a definite time, come to a conclusion. They must end in recovery, or death, or a chronic disease of the affected organ, most generally the consequence of a change in its structure.

When the constitution is good, and the disease not so powerful as to break down the vital forces of the organs, a recovery must ensue. These spontaneous cures are the boasts of the pretender; and, to the ignorant, the evidence of skill.

The laws that rule over disease, and the production and intention of the symptoms that are the evidences of disordered organs, must, then, be subjects for your study, as amongst the fundamental phenomena of the living economy.

The cultivation and teaching of medicine, as a science, with the object of generalizing, under the guidance of a strict logic, the phenomena of living beings, in their varying forms and states, is the intention of the Institutes of Medicine, the department for which the chair I have the honour to hold, was established. The Institutes consist in the ascertaning the laws, principles, fixed order, settled maxims, that exist in medicine. Without laws and principles there can be no science. The Institutes are the science. It examines into and determines those phenomena or facts, which, always the same, can be generalized into positive formula, and, consequently, form the laws of the science, applicable to innumerable individual cases.

This department is less known than the others. In many schools it does not constitute a separate department of teaching. Institutes were introduced into the medical instruction of this country, by the late eminent Professor Rush. He united them with the chair of the Theory and Practice, when he entered this university. The two continued in union until as late a period as 1835, when the institutes were separated from the chair of Practice, and erected into a distinct branch of instruction. I was honoured by the trustees with the appointment. An inquiry as to what is to be understood by the designation Institutes of Medicine, will tend to expound their character and objects.

The term is derived from the Latin, *institutum*; and means—principles, statutes, established laws, settled order, precepts, maxims. It is used in this sense by Cicero. *Præ-*

ceptis institutisque philosophiæ—Leges et instituta cognoscere. Dryden also employs it in this meaning:

"As nature's institute is yet in force,"

and again:

"To make the Stoic institutes thy own."

We find also the term adopted in law, from which it has been borrowed and brought into medicine. The Roman or civil law, is known as the Institutes of Justinian. The origin and intention of these will throw light on our subject.

The Roman law had fallen into the greatest confusion. It consisted of the primitive laws of the twelve tables, the senatusconsulti of the Senate and people of Rome, of the Senate and first Emperors, of the arbitrary edicts of the later Emperors, and the decisions of numberless jurists. Emanating from so many sources, and accumulated through so long a period, the law was a mass of contradictions, of conflicting authorities and opposing enactments. None knew what was the law. In every cause of importance, the advocate and judge were accompanied with a camel load of books, which were to be consulted for a decision upon it. To remedy this great evil, the Emperor Justinan appointed Trebonian, the most eminent jurist of the time, to undertake a review of the law, and bring it into system and order. Assisted by other learned authorities of the law, the task was accomplished, and their great work has been handed down to the present period, under the title of the Institutes of Justinian. The code of laws thus reduced from a state of chaos into regularity and method, is known as the civil law. This code is recognized as the established law by several of the continental powers; it has been supplanted in France only within a half century by the code Napoleon; and continues to form a part of the jurisprudence of Louisiana, in our own Government.

The Institutes of Medicine are intended, then, to infuse the spirit of positive science into the cultivation of medicine, and impart to it a positive character. It seeks to generalize all the undoubted facts of the science, and to establish, from

them, the principles that shall govern its decisions upon individual phenomena.

The Institutes are not anatomy, physiology, pathology or therapeutics. It surveys them all—it collects all the facts that emanate from the same principle or law, to enlighten and demonstrate its nature. As life is a unity but includes infinite variety, the Institutes trace that variety back to unity, and thus give harmony and combination, to what appears at first, discordant, irrelevant and confused.

The Institutes complete medicine as a science. If we compare medicine to a temple whose adytum or interior sanctuary is a rotunda, the other departments of medicine would be the magnificent columns that surround and support it. The Institutes are the crowning dome, surmounting the whole, imparting symmetry of form, giving unity of design, and from which all below is irradiated with a flood of light.

Or, if we should form medicine into a mighty pyramid, rising to the skies, while the other departments would constitute its base, and different faces, the Institutes would be the terminating point, from which the whole structure, and all that lies in contiguity to it, would be embraced in one view.

From the diversities that distinguish the departments of medicine from each other, separately cultivated, it is obvious, that there is wanted a band of union to combine them into one science. The Institutes accomplish this end. They form the varied and dissimilar parts of medicine into one body, producing co-operation, harmony and unity.

The course of lectures with which I am charged, is devoted to this object. It will be my business to teach you to examine, to analyze, and to re-combine; to decompose and recompose the numerous and complicated phenomena of organized and living beings; in a word, to teach you to reflect; to think, to reason in medicine.

The work before us is an arduous one. It will task all the abilities you or I possess. Let not this discourage us. Generous minds kindle before difficulties and glow with augmented ardor. What can more excite ambitious zeal, than the honour that awaits a successful pursuit of science and

knowledge? What knowledge more ennobling than that of God's highest work in the creation—the study of man in the mechanism, forces and laws of life, for the purpose of remedying their defects and their irregularities, the source of the greatest evils that afflict him here? No profession, more than medicine, deserves and commands the respect, the love and veneration of society. This feeling is warmly expressed by the celebrated Petrarch, with whose words I shall close this discourse: "*Salutis professores quæro, quos inveniam, non diligam modo, sed paulo minus adorabo, divini muneris largitores.*"